

GSM-R5-AA

1. Introduction

GSM-R5-AA is a device designed for **DIN rail mounting**. GSM-R5-AA is designed for monitoring, regulation and measurement via **2 analog sensors**. Type of analog input can be changed in SW SeaConfigurator - temperature KTY, Pt100, Pt1000 or current sensors 0 to 20 mA or voltage sensors 0 to 10V. GSM-R5-AA has also **one relay output**, which can control a coil of a contactor or can regulate according to analog inputs or make a pulse or reset after "ringing". The control is made via SMS messages or by ringing. The device is ready to operate immediately after connection to power supply and inserting of a SIM card of any GSM operator. It is also possible to readout the status of this input via status SMS from the GSM-R5-AA. Parameters are configured through [SeaConfigurator](#). There is an internal **built in Li-POL accumulator** which allows to send an SMS in case of a power failure and to restore the output status after a power failure. It's also possible to monitor the status of inputs and temperatures via SMS during power failure. All parameters are configured through [SeaConfigurator](#). Internal **data logger** keeps records about events and valued of inputs.



2. Package content

- 1) 1pcs GSM-R5-AA
- 2) 1pcs GSM antenna self-adhesive with 3m cable
- 3) 1pcs 8 pin connector (3,5mm), 1pcs 2 pin connector (3,5mm)
- 4) 1pcs 2 mm screwdriver

3. Recommended accessories

GSM-C-T2 temperature sensor KTY81-210 with cable 1m
GSM-C-T3 temperature sensor PT1000/A with cable 2m



4. Installation

1. To operate the GSM RELAY a SIM card of any GSM operator is necessary. SIM card must be functional, active and must have PIN code turned off. Also some credit is necessary if the Insert this prepared SIM card into the GSM-R5-AA device (cut corner first, contacts up – towards the inscription SIM). The correct insertion is indicated by mechanical click noise. Push gently and release to remove the SIM card.

Before inserting the SIM card into the GSM-R5-AA device, it is necessary to turn off setting of the "PINcode"!

Insert the active SIM card (= at least one call was made) to any mobile phone and turn off the requirement of setting the PIN. On most mobile telephones, this option can be found in menu "Setting the telephone protection" or "Setup -> Security -> PIN control".

2. Now it's possible to connect GSM antenna and power supply 12V or 24V to GSM-R5-AA. If the power supply is OK, the green LED (right from PWR connector) will light on. Apr. **1 minute** later the blue LED diode **GSM** will start flashing with a period of 4 sec.
3. To make the first test of the GSM-R5-AA, press the button for local control of output Y2(OUT). The green LED (near Y2) will light on. Than use your mobile telephone which you want to use to control the appliance and send a SMS text message **1234 ON** to the telephone number of the SIM card inserted into the GSM-R5-AA. This will switch off the output Y2(OUT) and the green LED will light off. GSM-R5-AA automatically sends a confirmation message on performing the operation. (You can change the password 1234 later in configuration.) The device respond to each phone number if the password is correct. The first user, who send a valid SMS, will get SMS about events and can control the device via "ringing".
4. Try "**ringing**" on device. You can make pulse on Y2(OUT) for apr. 4 seconds by calling on GSM-R5-AA (with factory settings). The device hangs up the call and makes pulse on the output. This can be used for example for opening an entrance gate. You have to use the same phone number as was in the very first SMS sent to the device.
5. Try temperature regulation to 25°C. Output Y2(OUT) will be switched on and off depending on the temperature input A3(°C). Connect the temperature sensor into the temperature input A3(°C) and send SMS in form of 1234 TEMP 25. Regulation can be canceled by SMS with command 1234 OFF or pressing the button BTN.
6. **GSM-R5-AA** factory setting is possible to restore by sending SMS message 1234 !FACTORY. If you made a backup configuration of **SeaConfigurator** settings (Settings tab -> Files button -> File option), you can restore your settings from this backup (Settings tab -> Files button -> File option).
7. The names of the inputs, outputs (their states) and the command names can be modified according to your ideas using the **SeaConfigurator** configuration software. This configuration program can be downloaded free of charge from www.seapraha.cz (enter the word „Configurator“ in the search) and install it on your PC.

5. Technical specifications

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Dimensions	Width	W	54		mm
	Height	H	24		mm
	Depth	D	86		mm
Supply	Voltage max. power supply	(during phone call, empty battery and relay ON)	8 V	12 V 2,8W	30 V V _{dc} W
	Standby	(connected to GSM network)		12V _{dc} 90mA	
Digital output	"Y2(OUT)", signal relay				
	Voltage	U	3	12	60 V
	Current	I			2 A
Analog input	Temperature measuring		-30		+55 °C
	Current measuring		0 to 20 mA		mA
	Voltage measuring		0 to 10 V		V
	Voltage measuring				
Accumulator	Li-POL			3,7	V
Temperature	Storage	t _{STG}	-40		+60 °C
	Operational	t _A	-20		+60 °C
	Actual measuring range	*) KTY81-210 *) PT100,PT1000	-50 -200		+80 +300 °C

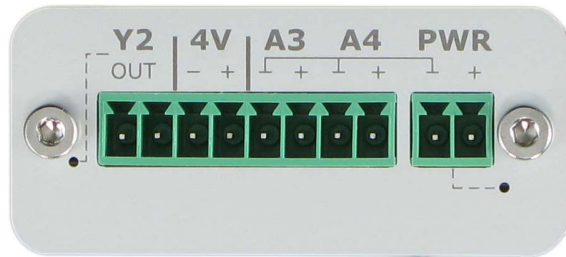
Use GSM-R5-AA inside box with ingress protection at least IP44!

*) GSM-C-T2 and GSM-C-T3 temperature sensors are not included in the commercial package.

6. Hardware

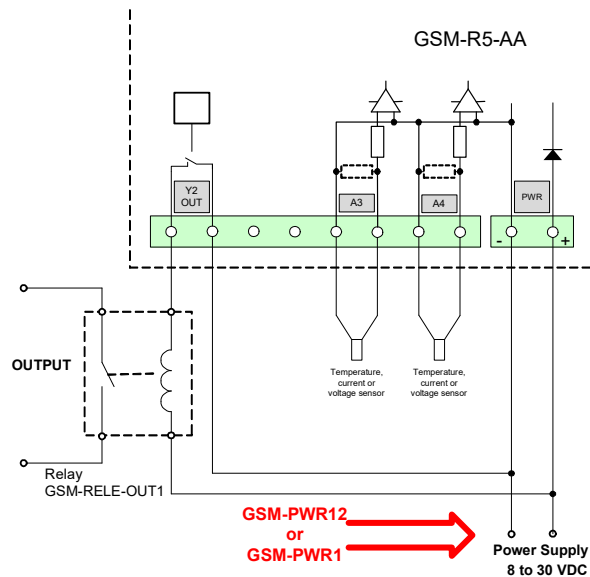
6.1 Power supply, Input and Output

Power supply connector has two pins. I/O connector has 8 pins: digital output (relay contact), and 2 analog input. Power supply is in a range +8 V_{dc} to 30 V_{dc}.



Connector	Description	Parameters
Y2(OUT)	Galvanically separated relay contacts	60 V / 2A
A3, A4	Type of analog input can be changed in SW SeaConfigurator	KTY 81-210 or Pt100 or Pt1000 or 0-20mA (4-20mA) or 0-10V
4V	Internal Li-ION accumulator for input supply equipped by protective serial resistor 50 Ohm	4V, MAX 10 mA
PWR	Power supply	+8 V _{dc} to +30 V _{dc}

6.2 Recommended connection



8.4 Macros

Built-in macros with variables

You can use macros listed in the macro list in the event text. These macros are used when you want to create your own status message. In this case, be sure to cancel the „state message reply“ option in the „General Settings“ section.

Examples:

SMS with text: „Temperature is low, [Y2].“ Will be sent as „Temperature is low, Y2=ZAP.“

SMS with text „output is ON([A3N] is [A3V]).“ Will be sent as „output is ON (TEMPERATURE is 18,1 °C).“, where „input name“ A3 is TEMPERATURE and „units“ are in °C.

Macros in incoming SMS

If you need to simplify a regular repeating command or a summary of commands (including even the parameters), create a macro. For example, create a macro: „FIRE“ with text „Y2 TEMP 25“. If you then send an SMS with the text „FIRE“, output Y2 (OUT) will be regulated by the temp. Sensors at 25 °C.

Macros in sent SMS

For example, you can define the macro „N1“ with the text „My Station is Best in the World“ to help you work on creating text in sent SMS. Then just use the text „[N1]“ in the outgoing SMS.

Note.: Macros must always be in square brackets.

8.5 Control using CML (for Smart phones)



This application can use smartphones with Android or iOS. Application makes easier control of **GSM-R5-AA** and state monitoring. You can download this application from Google Play or Apple Store for free, type into search „**CML SEA**“. After installing the application, make the first registration, take a photo of the QR code of the device into the „paring code“. The QR code you find in the **GSM-R5-AA**

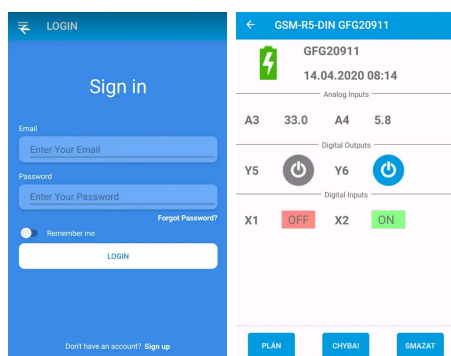
package.



WARNING: For the functionality of the CML application, it is necessary to have an activated data tariff on the SIM card, which is inserted in the device. Transferred data can be charged by the operator according to the tariff agreed by you.

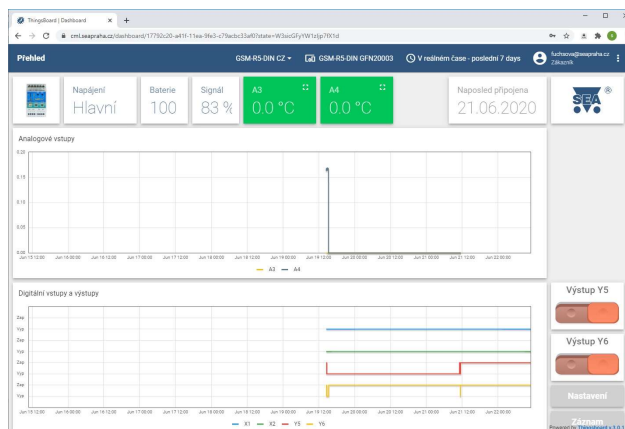
8.6 Enable CML

The CML function must be switched on in the GSM-Configurator in „Station settings“, press the edit button in the „CML“ line and check „Enable“ in the CML window.



8.7 On-line data on a website

You can monitor the measured values, including the history, and display them clearly on the **cml.seapraha.cz** website. You can also control the outputs or set up e-mails with alarm messages directly from the website.



9. Data logger

GSM-R5-AA provides saving(logging) of detailed information about activity of the device. Interval of saving is changed through **SeaConfigurator**. Saved log provides reverse analysis of device activity. Type of logged information are set by user during configuration of **GSM-R5-AA**. It's possible to save information about state changes of each inputs and outputs, incoming outgoing SMS. Format of log file is .csv (= Comma Separated Values). Name of the file is same as the day it was created(datum.csv).

Saved logs are of two types: periodic and state-change. State-change log includes up to date analog values.



Type	Description	Example
Time Local	Local date and time	2015-04-01 15:32:14
type *1)	Type of saved log (number)	1
type2	Type of saved log (word)	period
phone/ event	Telephone number / Event	+420123456789
text/ action	Text of SMS message / Action	GSM-R5-AA: Input turned ON.
A3[°C] *3)	State of analog input A3	25.7
A4[°C] *3)	State of analog input A4	15.2
Y2	State of output Y2	0
Y2.cmd *2)	Output Y2 is regulated to value 28,0 (current value is 22,6)	,R22.6/28.0
AP	Analog input "power" [V]	14,4
PWW	Digital input "power"	1
GSM.cell	Information about BTS	23002F,0404,047A_006E
GSM.sig	GSM signal strength [%]	35

Note: If any input or output is disabled (by SMS or by SeaConfigurator), it won't be mentioned in STATE message.

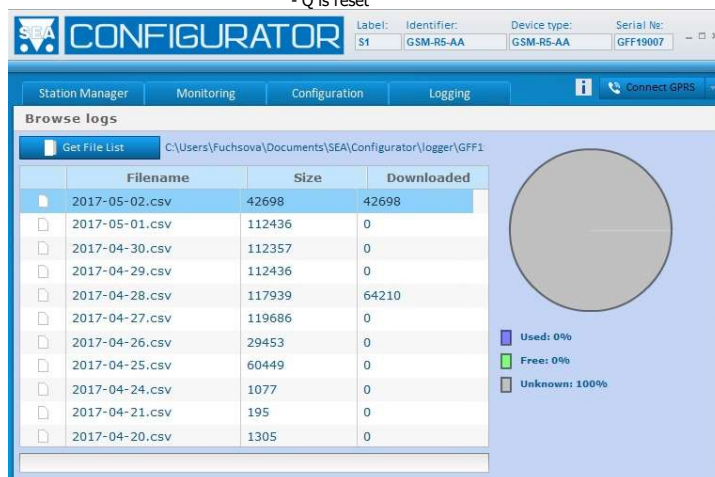
- *1)
- type (type2) - Types of records
 - 1 (perio) - regular period write
 - 2 (event) - record caused by digital input or output state change
 - 3 (insms) - received SMS
 - 4 (outsms) - sent SMS
 - 5 (incall) - incoming telephone call
 - 6 (outcall) - outgoing telephone call
 - 7 (debug) - ldebug information
 - 8 (talkl) - sound playback (not used)
 - 9 (fault) - error
 - 32(firmware) - firmware upload

*3) A3:

O ... disconnected;
Z ... Short circuit;
? ... unknown
[°C] ... Unit of measurement

*2) Y.cmd:

,R22.6/28.0 - means regulation; current temperature is 22,6°C
/ regulated temperature is 28,0°C
- P is pulse
- Q is reset



10. Warranty

General **warranty period is 24 months** after purchase, when eventual malfunction device will be repaired free of charge in SEA spol. s r.o. while shipping to SEA is paid by customer and SEA pays for shipping back to customer.

The warranty does not cover any damage caused by wrong use which does not comply the technical specifications and user instructions and any accidental damage (e.g. by water, lightening etc.).

SEA spol. s r.o. has NO RESPONSIBILITY for any damage, lost, costs and any other problems direct or inducted, caused by device malfunction from any reason.

In case of incompleteness or any damage in the packaging it is necessary to inform SEA spol. s r.o. immediately (within five days).

The manufacturer, seller or installation company is not responsible for the amount of transferred data, connections, telephone calls, sent SMS, MMS, or other charged services of GSM network operators and is not responsible for the amount of fees for GSM network operators of the installed SIM card. Nor is it liable for the energy consumed by the equipment it controls or for any other damage.

SEA spol. s r.o.
Dolnoměcholupská 21
102 00 Praha 10, tel. 272700058

CE Declaration of conformity
in accordance with the Radio and Telecommunications Terminal Equipment Directive 1999/5/EC (R&TTE) and Directive 2011/65/EU (ROHS).

We SEA, spol. s r.o., Dolnoměcholupská 21, CZ 102 00 Praha 10, Czech Republic, ID: 47117931 (manufacturer) declare under our sole responsibility, that product **GSM RELES AA type GSM-R5-AA** is in conformity with the following standards:

health and safety:	EN 62368-1:2004
EMC:	EN 61326-1:2013
radio frequency:	EN 301 511 v12.5.1, EN 301 489-7 v1.3.1
ROHS:	EN 50581:2012

The last two digits of year in which the CE marking was affixed: 17



Place of issue: Praha
Date of issue: 9.1.2017
Name: Ing. Vladimír Rosůlek
Grade: director



11. Frequently Asked Questions (FAQ)

Problem description	Possible cause	Solution
Blue LED diode GSM does not start blinking once per 3 seconds during 3 minutes after power on	No SIM card inserted or SIM card is not functional	Test the SIM card in your mobile phone. Try to make a call and receive a call from another mobile phone. Try to send a receive SMS message. Switch off using PIN on a SIM card. Cancel all call redirection for a SIM card. (Ask your mobile operator for help if necessary) New SIM card has to be activated. (Ask your mobile operator for help if necessary)
	New SIM card which was not activated yet	Check credit on a prepaid SIM card
	Low credit on a pre-paid SIM card	Tip: in the Czech Republic the codes are: *22# Vodafone (Vodafone card) *101# T-Mobile (Twist) *104*# O2 (GO)
	Low quality GSM signal	Test the GSM signal level with your mobile phone in the same location where you will use the GSM-R5-AA. For a test use a SIM card from GSM-R5-AA (it's important to test GSM signal of the same GSM operator). The mobile phone should show the signal level at least 2 bars.
The pulse on an output is not generated based on an incoming call (e. g. for a gate opening)	Phone calls are redirected for the SIM card	Cancel all phone calls redirection for the SIM card.
The temperature from an external temperature sensor is wrong	Too long lines to an external temperature sensor	The accuracy of temperature depends on a line length to an external temperature sensor (16 Ohms means 1°C). Use thicker wires to temperature sensor.

12. Examples

12.1 Remote control of heating on a cottage

The electrical appliance is connected to output OUT of GSM-R5-AA using a contactor.

Following SMS message will **switch ON** the electric power to a heating:

1234 ON

Following SMS message will **switch OFF** the electric power to a heating:

1234 OFF

Note: If the password was changed from the „default“ factory 1234 to another (e.g. 6543), the SMS has to be 6543 on (6543 off).

12.2 Remote control of heating regulation on a cottage

The electrical appliance is connected to output OUT of GSM-R5-AA using a contactor.

SMS message in the following format sets the requested temperature to 25 °C for temperature regulator and activates the function „regulator“:

1234 temp25

The proper function depends on the following parameters on a SIM card:

12.3 Entry gate opening by phone call from a mobile phone (without confirmation)

The gate control is connected to output OUT of GSM-R5-AA. After the first ringing from the phone number from which was sent the first valid SMS command GSM-R5-AA rejects a call and the entrance gate will open. The next call will close the entrance gate.

If you need to control the entry gate using different phone numbers, add these numbers in SeaConfigurator or via SMS message.

12.4 Entry gate opening by call from a mobile phone (with confirmation)

After the first ringing from the phone number which is in the list of users (xRUser. ..) of the GSM-R5-AA, it rejects a call and calls back. When the calling user rejects the call within 29 seconds, the entrance gate will open.

13. List of commands (multiple commands can be in one SMS message)

Command	Parameter	Example	Description
ON		1234 on	Turns on output with lowest number and confirms it via SMS – Also attaches current state message if it isn't turned off in configurator.
Y2 OFF		1234 y2 off	Turns off corresponding output. Output name or number must be specified in command. In configuration you can name the output and then use that name in command.
OFF		1234 off	Turns off output with lowest number.
REG TEPL	Degrees [°C]	1234 reg 25.5	If no output name is entered, Output with lowest number will be regulated.
Y2 PULSE	seconds	1234 y2 pulse 3600	Turns on output with lowest number for one hour, then turns it off.
RESET	seconds	1234 reset 86400	Turns off output with lowest number for one day then turns it on.
STATE		1234 state	Sends SMS message with state of device and with state of all enabled inputs/outputs.
NOBACK		1234 on noback	Execute command and doesn't confirm it.
!EN		1234 !en	Enables using output with lowest number.
!STOP	time	1234 !stop 12	Disables sending all event messages for 12 hours. Command 0 (=zero) cancels this command.
USER ADD	Phone number Phone number	1234 user add +420123456789 +420987654321	Adds user with Phone number +420123456789 and sets him same events as user +420987654321. If second number isn't entered. This user can only „ring“ (pulse).
USER DIS	Phone number	1234 user dis +420123456789	Disables user with Phone number +420123456789.
USER CHANGE	Phone number Phone number	1234 user change +420123456789 +420987654321	Change Phone number +420123456789 to +420987654321.
CODE ADD	password	1234 code add 12	Add new password 12 (password must be long from one to twenty numbers).
CODE DIS	password	1234 code dis 12	Disable password 12
CODE CHANGE	password password	1234 code change 12 123456	Change password 12 to 123456
REGISTER	number	1234 register 99887766	For GPRS connection is necessary send this SMS, enables station to register to server SEA spol. s r.o.
SET APN	APN name	1234 set apn „internet“	Sets GPRS APN name on word internet
SET APUSER	User name	1234 set apnuser „“	GPRS user name sets as empty field.
SET APNPWD	password	1234 set apnpwd „“	GPRS password sets as empty field.
!VERSION		1234 !version	Detail information about device (name, serial number, fw etc.).
!UPDATE		1234 !update	Command for downloading new fw from GPRS server SEA spol. s r.o.; GPRS must be enabled on SIM card.
!FACTORY		1234 !factory	Delete current configuration and set device to factory configuration. Who send valid SMS e.g. 1234 state will be a user.